## AMENDMENT TO THE SPECIFICATION

(a) At page 2, please replace the first paragraph, starting at line 1, with the following paragraph:

representation. If the noise is added in a way that makes the noise imperceptible when the digital representation is played, displayed, or printed the watermark will remain invisible to those who use the digital representation but can be located and read by those who put the additional information into the digital representation. The additional information can be anything the maker of the watermark chooses, but when watermarks are used to make piracy or forgery more difficult, the additional information is typically ownership or copyright information about the digital representation or information that can be used to authenticate the digital representation or the analog representation that results when the digital representation is played, displayed, or printed. For further information about watermarking, see Jian Zhao, "Look, It's Not There", in: *BYTE Magazine*, January, 1997. Detailed discussions of particular techniques for digital watermarking may be found in E. Koch and J. Zhao, "Towards Robust and Hidden Image Copyright Labeling", in: *Proc. Of 1995 IEEE Workshop on Nonlinear Signal and Image Processing*, June 20-22, 1995, in U.S. Patent 5,710,834, Rhoads, *Method and Apparatus Responsive to a Code Signal Conveyed through a Graphic Image,* issued Jan. 20, 1998, and in U.S. Patent 6,359,985, Koch, et al., *Technique for marking binary coded data sets*, issued March 19, 2002. For examples of commercial watermarking systems that use the digital watermarking techniques disclosed in the Rhoads patent, see Digimarc Corporation's web site[[,]] ~~www.digimarc.com~~. For an example of how digital watermarking may be used to authenticate analog representations, see U.S. patent 6,243,480, Jian Zhao, et al., *Digital authentication with analog documents*, issued June 5, 2001.

(b) At page 7, please replace the paragraph starting at line 13, with the following paragraph:

The compressed digital representations upon which the watermarking technique is employed are either in the time/space domain or the frequency domain. The watermark information is spread across the compressed digital representation by the method shown in flowchart 201 of FIG. 2. The compressed digital representation to which the watermark information is to be applied is digital representation 1, which belongs to domain 1 (205), which may be the space/time or frequency domain. Digital representation 1 is transformed into digital representation 2, which is

in domain 2 (207). Domain 2 is the *opposite* domain from domain 1; thus if domain 1 is space/time, domain 2 is frequency. Digital representation 2 is then randomized (209) (207). One way of doing this is to use a key, and the key may be known only to the entity doing the watermarking. Randomized digital representation 2 is then transformed into randomized digital representation 3, which is in domain 1 (211).

(c) At page 12, please replace the paragraph starting at line 9, with the following paragraph:

As shown in FIG. 6, watermark message 609 of length K characters or bytes is input to string to bits conversion block 613. Watermark message 609 may be any sequence of characters or bytes which suits the purposes of the watermarking entity. String to bits conversion block 613 converts the watermark message 609 into a sequence of bytes of data. These bytes go to channel encoder 617, which adds the ECC code. The 28-bit watermark bytes that result go to interleaver 621, which interleaves the bits of the watermark bytes and outputs them to watermarked frame maker 623 as watermark 607. Watermarked. frame maker 623 adds the bits to the frames. Each watermark 607 is preceded by a sync word 605, which is made by using key 411 ( which may be any key that suits the purpose, including the same one used to randomize and derandomize the time domain frames) as a seed value in random number generator 615. A random 16 bit value is produced, and this value is used to produce all of the sync words 605. Channel encoder 619 adds the ECC bits for the 44-bit sync word 605 and watermarked frame maker [[823]] 623 inserts the bits of sync word 605 between the watermarks 607. Together, the 44-bit sync word [[604]] 605 and watermark 607 make up watermark information 409.